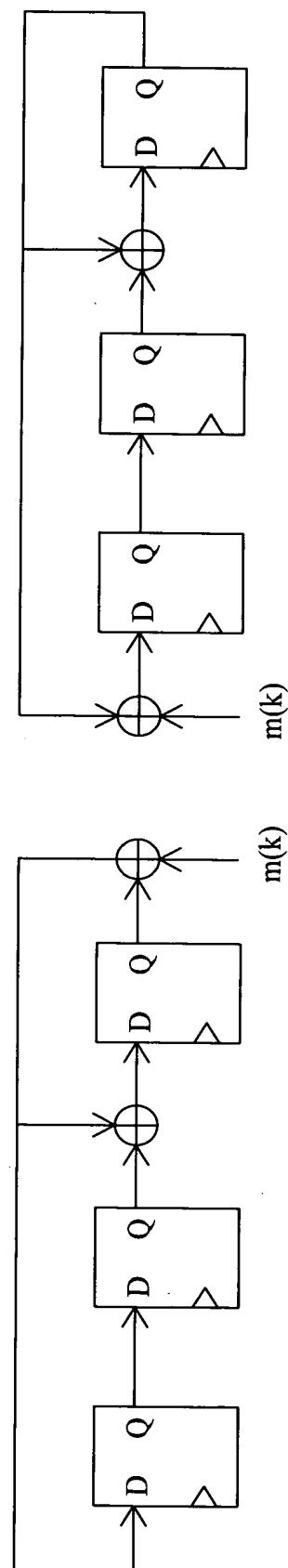
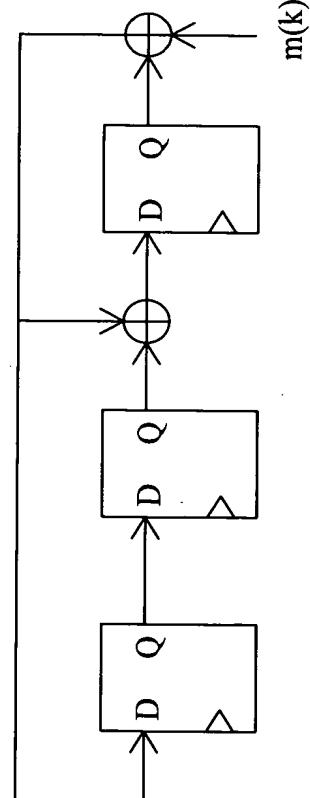


$$g(x) = x^3 + x^2 + 1$$



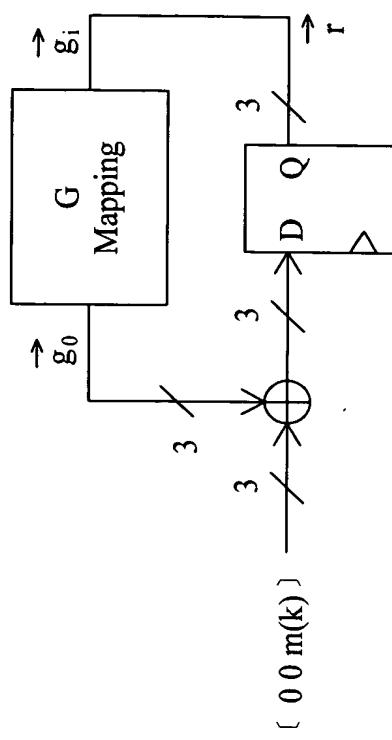
Scheme 2



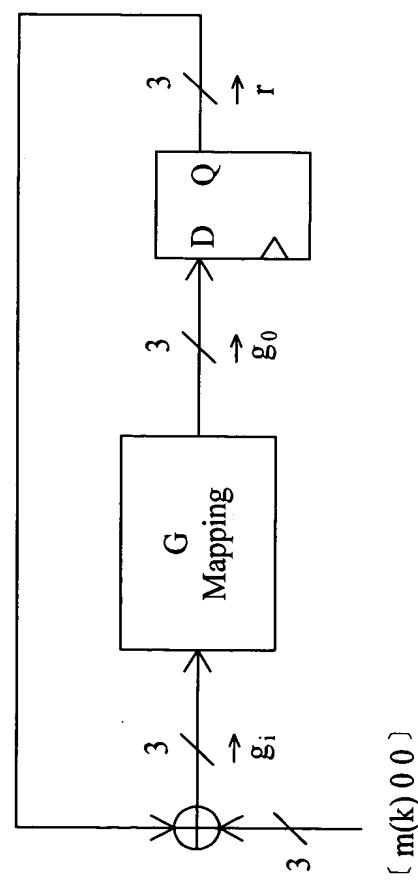
Scheme 1

Fig. 1

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Scheme 2



Scheme 1

Fig. 2

$G =$

|       |            |
|-------|------------|
| Row31 | 0x40000000 |
| Row30 | 0x20000000 |
| Row29 | 0x10000000 |
| Row28 | 0x08000000 |
| Row27 | 0x04000000 |
| Row26 | 0x82000000 |
| Row25 | 0x01000000 |
| Row24 | 0x00800000 |
| Row23 | 0x80400000 |
| Row22 | 0x80200000 |
| Row21 | 0x00100000 |
| Row20 | 0x00080000 |
| Row19 | 0x00040000 |
| Row18 | 0x00020000 |
| Row17 | 0x00010000 |
| Row16 | 0x80008000 |
| Row15 | 0x00004000 |
| Row14 | 0x00002000 |
| Row13 | 0x00001000 |
| Row12 | 0x80000800 |
| Row11 | 0x80000400 |
| Row10 | 0x80000200 |
| Row9  | 0x00000100 |
| Row8  | 0x80000080 |
| Row7  | 0x80000040 |
| Row6  | 0x00000020 |
| Row5  | 0x80000010 |
| Row4  | 0x80000008 |
| Row3  | 0x00000004 |
| Row2  | 0x80000002 |
| Row1  | 0x80000001 |
| Row0  | 0x80000000 |

$G^{-1} =$

|       |            |
|-------|------------|
| Row31 | 0x00000001 |
| Row30 | 0x80000000 |
| Row29 | 0x40000000 |
| Row28 | 0x20000000 |
| Row27 | 0x10000000 |
| Row26 | 0x08000000 |
| Row25 | 0x04000001 |
| Row24 | 0x02000000 |
| Row23 | 0x01000000 |
| Row22 | 0x00800001 |
| Row21 | 0x00400001 |
| Row20 | 0x00200000 |
| Row19 | 0x00100000 |
| Row18 | 0x00080000 |
| Row17 | 0x00040000 |
| Row16 | 0x00020000 |
| Row15 | 0x00010001 |
| Row14 | 0x00008000 |
| Row13 | 0x00004000 |
| Row12 | 0x00002000 |
| Row11 | 0x00001001 |
| Row10 | 0x00000801 |
| Row9  | 0x00000401 |
| Row8  | 0x00000200 |
| Row7  | 0x00000101 |
| Row6  | 0x00000081 |
| Row5  | 0x00000040 |
| Row4  | 0x00000021 |
| Row3  | 0x00000011 |
| Row2  | 0x00000008 |
| Row1  | 0x00000005 |
| Row0  | 0x00000003 |

Fig. 3

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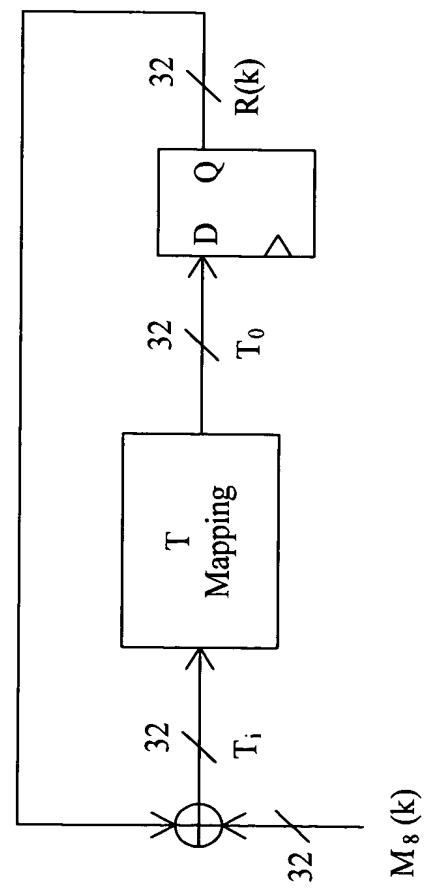
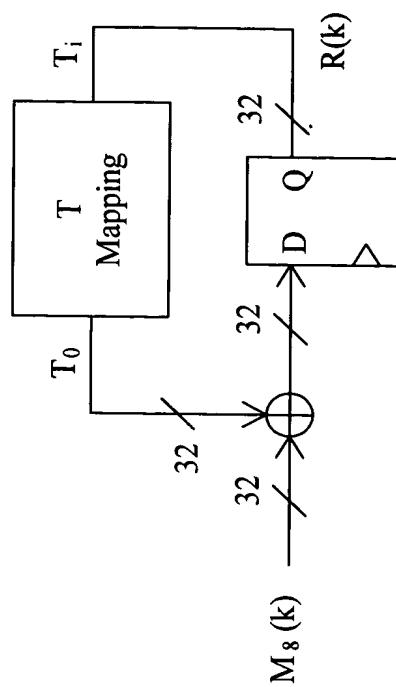


Fig. 4

$T = G^8 =$

|       |            |   |       |            |   |
|-------|------------|---|-------|------------|---|
| Row31 | 0x20800000 | 2 | Row31 | 0x000000d5 | 5 |
| Row30 | 0x90400000 | 3 | Row30 | 0x0000006a | 4 |
| Row29 | 0xc8200000 | 4 | Row29 | 0x00000035 | 4 |
| Row28 | 0x64100000 | 4 | Row28 | 0x0000001a | 3 |
| Row27 | 0xb2080000 | 5 | Row27 | 0x0000000d | 3 |
| Row26 | 0x59040000 | 5 | Row26 | 0x00000006 | 2 |
| Row25 | 0x0c020000 | 3 | Row25 | 0x000000d6 | 5 |
| Row24 | 0x86010000 | 4 | Row24 | 0x0000006b | 5 |
| Row23 | 0x43008000 | 4 | Row23 | 0x80000035 | 5 |
| Row22 | 0x01004000 | 2 | Row22 | 0x400000cf | 7 |
| Row21 | 0x20002000 | 2 | Row21 | 0x200000b2 | 5 |
| Row20 | 0x10001000 | 2 | Row20 | 0x10000059 | 5 |
| Row19 | 0x88000800 | 3 | Row19 | 0x0800002c | 4 |
| Row18 | 0xc4000400 | 4 | Row18 | 0x04000016 | 4 |
| Row17 | 0x62000200 | 4 | Row17 | 0x0200000b | 4 |
| Row16 | 0x31000100 | 4 | Row16 | 0x01000005 | 3 |
| Row15 | 0xb8000080 | 5 | Row15 | 0x008000d7 | 7 |
| Row14 | 0xdc000040 | 6 | Row14 | 0x0040006b | 6 |
| Row13 | 0xee000020 | 7 | Row13 | 0x00200035 | 5 |
| Row12 | 0x77000010 | 7 | Row12 | 0x0010001a | 4 |
| Row11 | 0x1b000008 | 5 | Row11 | 0x000800d8 | 5 |
| Row10 | 0x2d000004 | 5 | Row10 | 0x000400b9 | 6 |
| Row9  | 0x36000002 | 5 | Row9  | 0x00040089 | 4 |
| Row8  | 0x1b000001 | 5 | Row8  | 0x00020044 | 3 |
| Row7  | 0xad000000 | 5 | Row7  | 0x000080f7 | 8 |
| Row6  | 0xf6000000 | 6 | Row6  | 0x000040ae | 6 |
| Row5  | 0xfb000000 | 7 | Row5  | 0x00002057 | 6 |
| Row4  | 0x5d000000 | 5 | Row4  | 0x000010fe | 8 |
| Row3  | 0x8e000000 | 4 | Row3  | 0x000008aa | 5 |
| Row2  | 0xc7000000 | 5 | Row2  | 0x00000455 | 5 |
| Row1  | 0xc3000000 | 4 | Row1  | 0x000002ff | 9 |
| Row0  | 0x41000000 | 2 | Row0  | 0x000001aa | 5 |

Fig. 5

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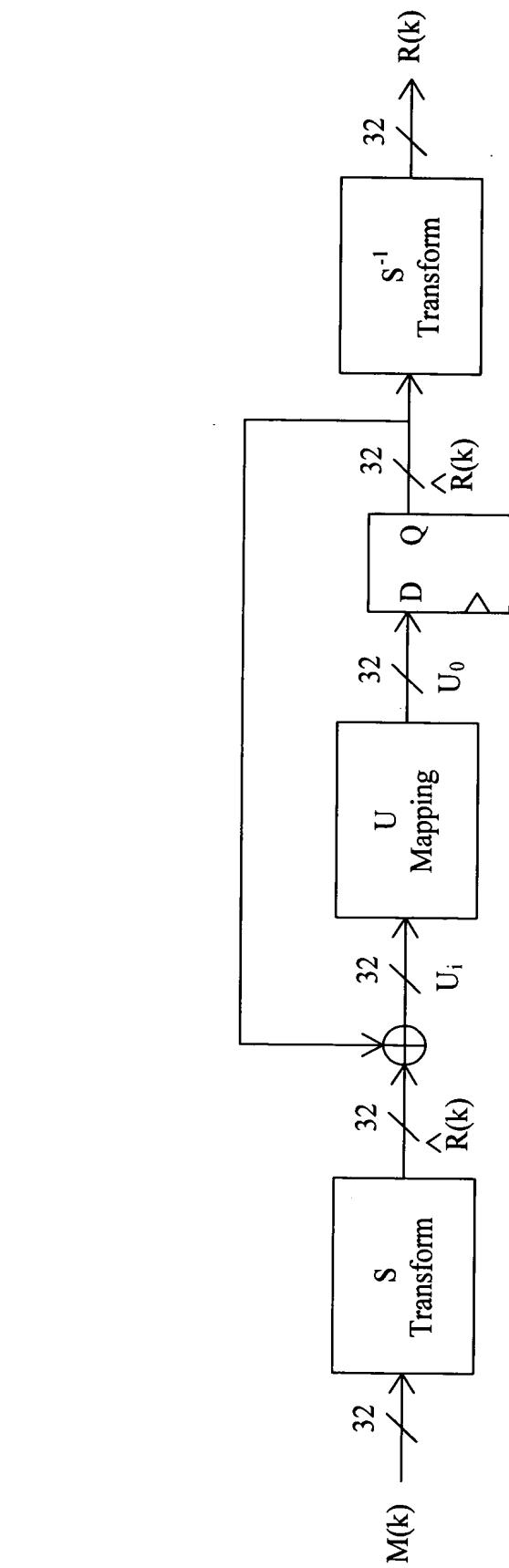


Fig. 6

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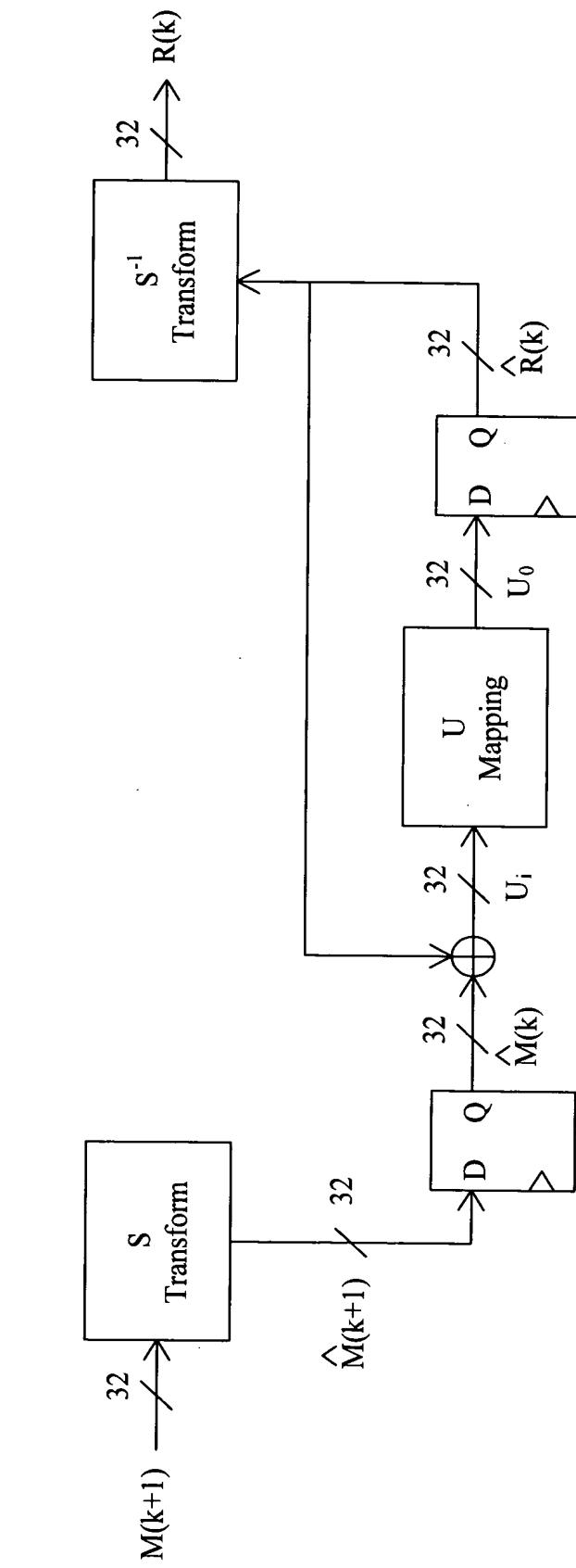


Fig. 7

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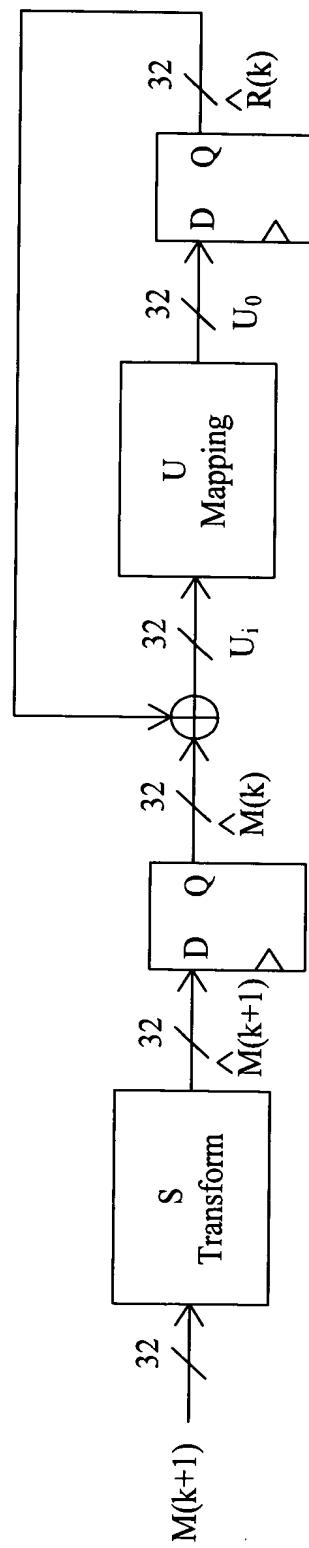


Fig. 8

|                   |   |                   |    |
|-------------------|---|-------------------|----|
| U <sub>32</sub> = | { | Row31 0xfb808a20  | 12 |
|                   |   | Row30 0x7dc04590  | 13 |
|                   |   | Row29 0xbbee022c8 | 14 |
|                   |   | Row28 0x5e70116d  | 15 |
|                   |   | Row27 0x2fb809b2  | 15 |
|                   |   | Row26 0x97dc0459  | 15 |
|                   |   | Row25 0xb06e8804  | 11 |
|                   |   | Row24 0x5837448e  | 14 |
|                   |   | Row23 0xac1ba243  | 14 |
|                   |   | Row22 0xac8d5b00  | 13 |
|                   |   | Row21 0xad462620  | 12 |
|                   |   | Row20 0x57a31311  | 14 |
|                   |   | Row19 0x2b518888  | 11 |
|                   |   | Row18 0x95a8c4cc  | 14 |
|                   |   | Row17 0xcad46262  | 14 |
|                   |   | Row16 0x646a3130  | 12 |
|                   |   | Row15 0x483593b9  | 15 |
|                   |   | Row14 0x249ac8d4  | 13 |
|                   |   | Row13 0x924d64e6  | 15 |
|                   |   | Row12 0x6610e0b0  | 11 |
|                   |   | Row11 0x0fd1ce00  | 13 |
|                   |   | Row10 0xb4096225  | 12 |
|                   |   | Row9 0x20843b3f   | 14 |
|                   |   | Row8 0x91c21c1a   | 12 |
|                   |   | Row7 0x33e185a5   | 15 |
|                   |   | Row6 0x627048fe   | 15 |
|                   |   | Row5 0x313824fb   | 15 |
|                   |   | Row4 0xe21c9854   | 13 |
|                   |   | Row3 0x8a0ec786   | 15 |
|                   |   | Row2 0x4f09a449   | 13 |
|                   |   | Row1 0x18033bc2   | 12 |
|                   |   | Row0 0xf6011640   | 11 |

Fig. 9

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|                          |            |   |
|--------------------------|------------|---|
| $S_{32} = S_{32}^{-1} =$ |            |   |
| Row31                    | 0x80000000 | 1 |
| Row30                    | 0x40000000 | 1 |
| Row29                    | 0x20000000 | 1 |
| Row28                    | 0x10000000 | 1 |
| Row27                    | 0x08000000 | 1 |
| Row26                    | 0x04000000 | 1 |
| Row25                    | 0x02000000 | 1 |
| Row24                    | 0x01000000 | 1 |
| Row23                    | 0x00800000 | 1 |
| Row22                    | 0x00400000 | 1 |
| Row21                    | 0x00200000 | 1 |
| Row20                    | 0x00100000 | 1 |
| Row19                    | 0x00080000 | 1 |
| Row18                    | 0x00040000 | 1 |
| Row17                    | 0x00020000 | 1 |
| Row16                    | 0x00010000 | 1 |
| Row15                    | 0x00008000 | 1 |
| Row14                    | 0x00004000 | 1 |
| Row13                    | 0x00002000 | 1 |
| Row12                    | 0x01001001 | 3 |
| Row11                    | 0x00000900 | 2 |
| Row10                    | 0x00000400 | 1 |
| Row9                     | 0x00000200 | 1 |
| Row8                     | 0x00000100 | 1 |
| Row7                     | 0x00000080 | 1 |
| Row6                     | 0x00000040 | 1 |
| Row5                     | 0x00000020 | 1 |
| Row4                     | 0x00000010 | 1 |
| Row3                     | 0x00000008 | 1 |
| Row2                     | 0x0000000c | 2 |
| Row1                     | 0x00000002 | 1 |
| Row0                     | 0x00000001 | 1 |

Fig. 10

|       |            |   |
|-------|------------|---|
| Row31 | 0x20800000 | 2 |
| Row30 | 0x90400000 | 3 |
| Row29 | 0xc8200000 | 4 |
| Row28 | 0x64100000 | 4 |
| Row27 | 0xb2080000 | 5 |
| Row26 | 0x59040000 | 5 |
| Row25 | 0x0c020000 | 3 |
| Row24 | 0x86010000 | 4 |
| Row23 | 0x03008000 | 3 |
| Row22 | 0x21004000 | 3 |
| Row21 | 0x00002000 | 1 |
| Row20 | 0x00001100 | 2 |
| Row19 | 0x88000900 | 4 |
| Row18 | 0xc4000400 | 4 |
| Row17 | 0x62000200 | 4 |
| Row16 | 0x31000100 | 4 |
| Row15 | 0x28000080 | 3 |
| Row14 | 0x04200040 | 3 |
| Row13 | 0x22200020 | 4 |
| Row12 | 0x08100010 | 3 |
| Row11 | 0x00000009 | 2 |
| Row10 | 0x2c000004 | 4 |
| Row9  | 0x36000002 | 5 |
| Row8  | 0x1b000001 | 5 |
| Row7  | 0x8c004000 | 4 |
| Row6  | 0x92100000 | 4 |
| Row5  | 0xa2040000 | 4 |
| Row4  | 0x1c000000 | 3 |
| Row3  | 0x8e000000 | 4 |
| Row2  | 0x41010000 | 3 |
| Row1  | 0xc3000000 | 4 |
| Row0  | 0x41000000 | 2 |

$U_{tx\_08} =$

Fig. 11

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$$S_{tx\_08} = S_{tx\_08}^{-1} =$$

|       |            |   |
|-------|------------|---|
| Row31 | 0x80000000 | 1 |
| Row30 | 0x40000000 | 1 |
| Row29 | 0x20000000 | 1 |
| Row28 | 0x10000000 | 1 |
| Row27 | 0x08000000 | 1 |
| Row26 | 0x04000000 | 1 |
| Row25 | 0x02000000 | 1 |
| Row24 | 0x01000000 | 1 |
| Row23 | 0x00800000 | 1 |
| Row22 | 0x00400000 | 1 |
| Row21 | 0x00200000 | 1 |
| Row20 | 0x00100000 | 1 |
| Row19 | 0x00080000 | 1 |
| Row18 | 0x00040000 | 1 |
| Row17 | 0x00020000 | 1 |
| Row16 | 0x00010000 | 1 |
| Row15 | 0x40008000 | 2 |
| Row14 | 0x20004000 | 2 |
| Row13 | 0x20002000 | 2 |
| Row12 | 0x10001100 | 3 |
| Row11 | 0x00000900 | 2 |
| Row10 | 0x00000400 | 1 |
| Row9  | 0x00000200 | 1 |
| Row8  | 0x00000100 | 1 |
| Row7  | 0x00400080 | 2 |
| Row6  | 0x10000040 | 2 |
| Row5  | 0x04000020 | 2 |
| Row4  | 0x00000011 | 2 |
| Row3  | 0x00000008 | 1 |
| Row2  | 0x01000004 | 2 |
| Row1  | 0x00000002 | 1 |
| Row0  | 0x00000001 | 1 |

Fig. 12

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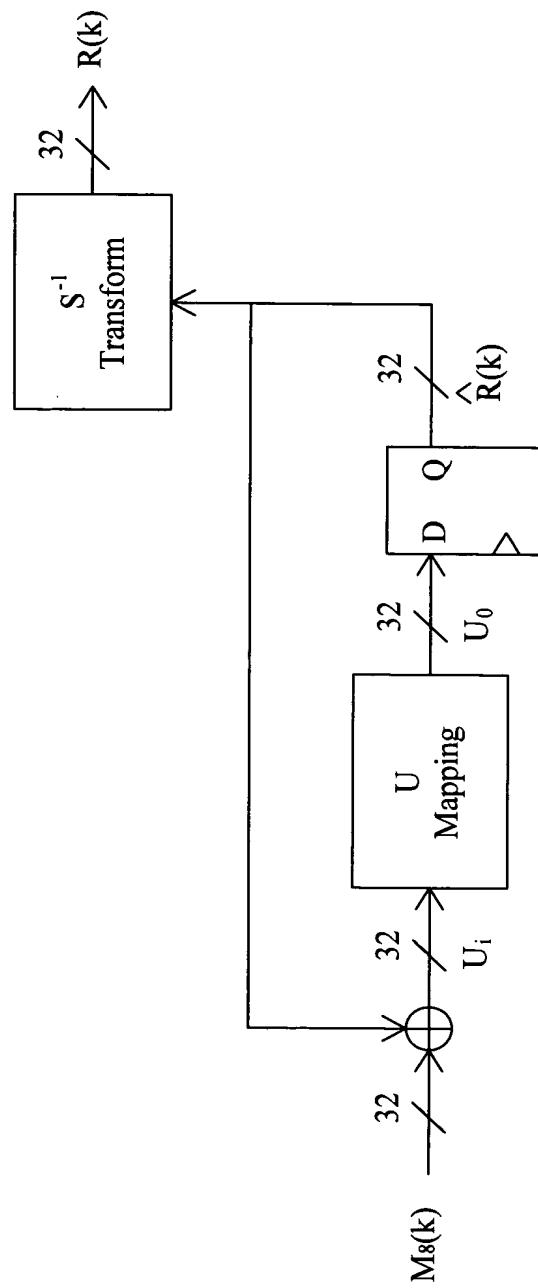


Fig. 13

|       |            |   |
|-------|------------|---|
| Row31 | 0x20800000 | 2 |
| Row30 | 0x90400000 | 3 |
| Row29 | 0xc8200000 | 4 |
| Row28 | 0x64100000 | 4 |
| Row27 | 0xb2080000 | 5 |
| Row26 | 0x59040000 | 5 |
| Row25 | 0x0c020000 | 3 |
| Row24 | 0x86010000 | 4 |
| Row23 | 0x03008000 | 3 |
| Row22 | 0x21004000 | 3 |
| Row21 | 0x00022000 | 2 |
| Row20 | 0x00001040 | 2 |
| Row19 | 0x88000900 | 4 |
| Row18 | 0xc4000400 | 4 |
| Row17 | 0x62000200 | 4 |
| Row16 | 0x31000100 | 4 |
| Row15 | 0x28000080 | 3 |
| Row14 | 0x04200040 | 3 |
| Row13 | 0x00200030 | 3 |
| Row12 | 0x08500010 | 4 |
| Row11 | 0x00000009 | 2 |
| Row10 | 0x2c000004 | 4 |
| Row9  | 0x36000002 | 5 |
| Row8  | 0x1b000001 | 5 |
| Row7  | 0x8c004000 | 4 |
| Row6  | 0x92100000 | 4 |
| Row5  | 0x00400002 | 2 |
| Row4  | 0x04040000 | 2 |
| Row3  | 0x8e000000 | 4 |
| Row2  | 0x41010000 | 3 |
| Row1  | 0xc3000000 | 4 |
| Row0  | 0x41000000 | 2 |

$U_{rx\_08} =$

Fig. 14

|                |   |  |   |                     |   |  |   |
|----------------|---|--|---|---------------------|---|--|---|
| $S_{rx\_08} =$ | { | Row31 0x80000000 1<br>Row30 0x40000000 1<br>Row29 0x20000000 1<br>Row28 0x10000000 1<br>Row27 0x08000000 1<br>Row26 0x04000000 1<br>Row25 0x02000000 1<br>Row24 0x01000000 1<br>Row23 0x00800000 1<br>Row22 0x00400000 1<br>Row21 0x00200000 1<br>Row20 0x00100000 1<br>Row19 0x00080000 1<br>Row18 0x00040000 1<br>Row17 0x00020000 1<br>Row16 0x00010000 1<br>Row15 0x40008000 2<br>Row14 0x20004000 2<br>Row13 0x20022000 3<br>Row12 0x00001040 2<br>Row11 0x00000900 2<br>Row10 0x00000400 1<br>Row9 0x00000200 1<br>Row8 0x00000100 1<br>Row7 0x00400080 2<br>Row6 0x10000040 2<br>Row5 0x40000230 4<br>Row4 0x04000010 2<br>Row3 0x00000008 1<br>Row2 0x01000004 2<br>Row1 0x00000002 1<br>Row0 0x00000001 1 | } | $S_{rx\_08}^{-1} =$ | { | Row31 0x80000000 1<br>Row30 0x40000000 1<br>Row29 0x20000000 1<br>Row28 0x10000000 1<br>Row27 0x08000000 1<br>Row26 0x04000000 1<br>Row25 0x02000000 1<br>Row24 0x01000000 1<br>Row23 0x00800000 1<br>Row22 0x00400000 1<br>Row21 0x00200000 1<br>Row20 0x00100000 1<br>Row19 0x00080000 1<br>Row18 0x00040000 1<br>Row17 0x00020000 1<br>Row16 0x00010000 1<br>Row15 0x40008000 2<br>Row14 0x20004000 2<br>Row13 0x20022000 3<br>Row12 0x10001040 3<br>Row11 0x00000900 2<br>Row10 0x00000400 1<br>Row9 0x00000200 1<br>Row8 0x00000100 1<br>Row7 0x00400080 2<br>Row6 0x10000040 2<br>Row5 0x44000230 5<br>Row4 0x04000010 2<br>Row3 0x00000008 1<br>Row2 0x01000004 2<br>Row1 0x00000002 1<br>Row0 0x00000001 1 | } |
|----------------|---|--|---|---------------------|---|--|---|

Fig. 15

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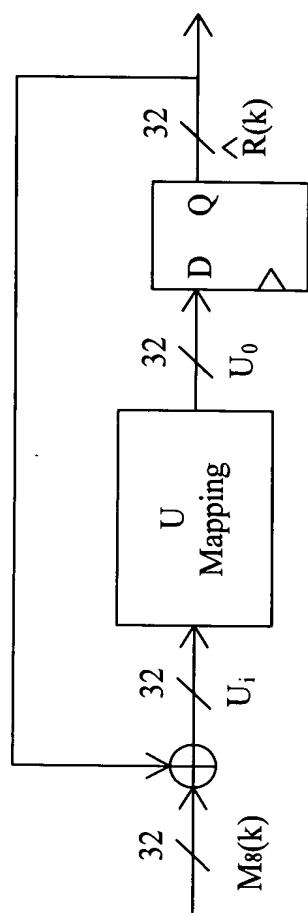


Fig. 16